RSS by Roland

A R – 2 0 0 S AUDIO RECORDER

RS-232C Reference

- Contents -

Section1   Introduction

This manual explains how to control the AR-200S using RS-232C. For details on the operation of the AR-200S itself, refer to the AR-200S owner's manual. This manual assumes that you have a basic understanding of computers. For explanations of computer terminology or operation, please refer to commercially available manuals.

The contents of this manual are subject to change without notice.

1.1   If You Have Been Using the AR-3000

The AR-200's command set, which employs RS-232C, is designed to be partly compatible with the AR-3000. Since the AR-200S and AR-3000 are not functionally identical in every respect, some functions cannot be used.   For more information, check the included specifications.

1.2   If You Have Been Using the AR-2000

The AR-200S's command set, which employs RS-232C, is designed to be backwardly compatible with the AR-2000. This means it is possible for you to continue using the control system you have used with the AR-2000. However, since the AR-200S and AR-2000 are not functionally identical in every respect, some functions cannot be used. For more information, check the included specifications.
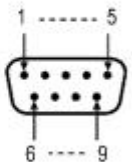
Section2   Setup

2.1   About the RS-232C Interface

RS-232C is a standardized type of serial interface. The connections which are used by the AR-200S are discussed below.

2.1.1   Connector and Cable

Connector specifications

Cable specifications   *2

*1 This is already connected in inside of the AR-200S. (4 – 6, 7 - 8)

*2 At least three line(RXD, TXD, GND) should be connected as shown in a figure.

2.2   Handshaking

If the AR-200S's processing speed is slower than the speed at which data is transmitted from the computer, measures must be taken to avoid data loss. Conversely, data loss will also occur if data is transmitted from the AR-200S faster than the computer can process it.
For these reasons, the AR-200S uses "Xon/Xoff" handshaking.
The external computer can control transmission from the AR-200S in the same way.
The ASCII code signal name for Xon is DC1, which is 11H.
The ASCII code signal name for Xoff is DC3, which is 13H.

2.3   Setup Procedure

Here is the procedure for setting up the external computer and the AR-200S.

1) Connections with the computer
   Use an RS-232C cable to connect the two devices. Refer to "2.4 Connections with the computer."
2) Turn on the power for the AR-200S and the computer
3) Computer settings
   Set the communication parameters. Refer to "2.5 Computer settings."
4) AR-200S settings
   Set the communication parameters. Refer to "2.6 AR-200S settings."
5) Operate the AR-200S
   Transmit data between the external computer and the AR-200S.

2.4   Connections with the Computer

1) Turn off the power of the AR-200S and the computer.
2) Use the appropriate cable to connect the RS-232C -compatible connector of the computer to the RS-232C connector located on the rear panel of the AR-200S. Refer to "2.1.1 Connector and Cable" for the appropriate cable to use.

2.5   Computer Settings

1) Communication parameters for the computer

Communication method	start - stop system (asynchronous) full duplex
Baud rate	4800 / 9600 / 19200 / 38400 BPS
	(for compatibility with legacy models : AR-200S)
Parity	none
Data length	8 bits
Stop bit	1 bit
Code set	ASCII
Xon Xoff	on

If you are using MS-DOS, the above settings can be made using the "SPEED" and "SWITCH" commands. For details on these settings, refer to your MS-DOS owner's manual.

2.6 AR-200S Settings

When using the AR-2000 via RS-232C, the baud rate must be specified.

2.6.1 Baud Rate

If the AR-200S's power is turned on when a card is not inserted, the baud rate will default to 9600 bps. If a card is then inserted, the settings will change to the settings which are contained in the card. However this will occur only for the first-inserted card, and subsequently inserted cards will be ignored.

Section3   Overview of Commands

The AR-200S and the computer communicate using commands.

3.1   Command Structure

Commands consist of STX (02H) + two uppercase characters.
However, the Type 0 commands listed later are exceptions to this.

3.1.1   Communication Protocol

Depending on the command, four types of communication protocol are used between the computer and the AR-200S. As also explained in chapter 4, the ACK referred to in this document is ASCII code 06H (ACK), and the ER command is a command that transmits/receives an error.

1) When telling the AR-200S to perform an operation or make a setting.
   This is done using the 4.2.1 Control and 4.2.3 Setting commands explained in chapter 4.
   Commands use the following procedure.

<div align="center">

a. stx + command

COMPUTER ──────────────────────→ AR-200S

b. ack or stx ER command
←──────────────────────

</div>
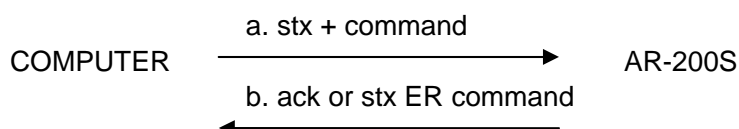
   a. The command is sent from the computer to the AR-200S.
   b. If the command is received correctly, the AR-200S will transmit an ACK command. If not, it will transmit an ER command.

2) To verify the settings of the AR-200S
   This is done using the 4.2.4 Request command explained in chapter 4. The command to check the setting status of the AR-200S uses the following procedure.

<div align="center">

a. stx + command

COMPUTER ──────────────────────→ AR-200S

b. stx + command or stx ER command
←──────────────────────

c. ack or stx ER command
──────────────────────→

</div>
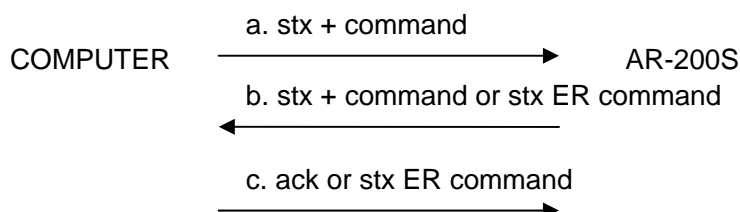
   a. The command is sent from the computer to the AR-200S.
   b. If the command was received correctly, the AR-200S will transmit its settings as the Setting output command. If the command was received incorrectly, the AR-200S will transmit an ER command.
   If the output from the AR-200S is received correctly, send an ACK command. This ACK may be omitted, and is not absolutely necessary. If not correctly, an ER command "ER:0;" can be sent to the AR-200S. The AR-200S will re-transmit the Setting output command that was output instep "b". This command may also be omitted, and is not absolutely necessary.
   You may instead re-do the sequence from step "a".

3) Commands originating automatically from the AR-200S
Some commands are transmitted automatically from the AR-200S. The two commands CC (card insertion status output) and %% (completion status output when a card operation takes place) fall in this category, and use the following procedure.

a. stx + command

COMPUTER ⟵——————————— AR-200S
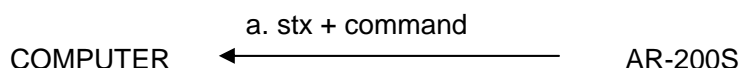
a. The AR-200S will automatically transmit the command.
There is no need to return an ACK, etc.

4) Commands accompanied by confirmation
The 4.2.2 Edit command explained in chapter 4 is of this type. To prevent accidental erasure of data, edit commands are executed after entering Delete mode. Commands use the following procedure.

a. stx + DM command

COMPUTER ——————————⟶ AR-200S

b. ack or stx ER command
⟵———————————

c. ack or stx ER command
———————————⟶

d. stx + Edit command (same as step "c")
⟵———————————

e. ack or stx ER command
———————————⟶
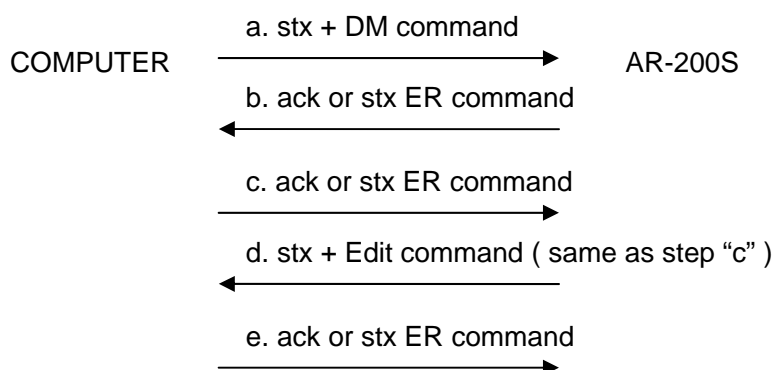
a. Transmit the DM command. The AR-200S will enter Delete mode. Then PLAY/CLIP indicator and REC indicator will flash alternately.
b. If the DM command is received correctly, an ACK will be returned. If there is a command error, the ER command will be returned and the AR-200S will automatically exit Delete mode.
c. If no error has occurred, transmit the command you wish to execute.
d. To confirm, the AR-200S will send back the command that it received in step "c".
e. If the command is correct, send an ACK. This will cause the command to be executed. Then, after receiving the command, the AR-200S will automatically exit Delete mode. If the command is an error, you can send an ER command "ER:1;". The command will be canceled, and the AR-200S will exit Delete mode.

3.1.2   Command Format

Commands (control signals) have several formats.
Type 0:   Those consisting only of a control code.
'**;**' etc. is not attached. These consist only of a control code.
Example) **ACK**
Type 1:   Commands with no parameters
These commands end in '**;**'
Example) **stxST;**
Type 2:   Commands with parameters.
Command : parameter, parameter . . . ;
Command and parameter are separated by a colon '**:**'
Parameter and parameter are separated by a comma '**,**'
A semicolon '**;**' is placed at the end of the parameter.

3.1.3 About Input Parameters

1) Generally, parameters use decimal notation, and are variable length.
Example） **stxDC:10;   stxDC:5;**
Example） **stxMP:A1,30;   ,stxMP:A20,255;**

2) Characters in a card name etc. are enclosed in double quotation marks (").
Example） **stxCV:0,"ABCDEFGH",0;**

3) To specify the phrase, put an 'A' in front of the phrase number.
Example） **stxPA:A1;** （ plays back phrase 1）
* A01 , A001 or A0001 is the same as A1.

3.1.4 About Output Parameters

1) Generally, parameters use decimal notation, and are variable length.
But phrase name and time are fixed length.
Example） phrase name（ A1 – A999 , B1 – B999 ）：A001 , A020 , A300 , _.
Example） phrase name（ A1000 , B1000 ）：A1000 , B1000
Example） Time：00H00M06S14F7S / 05M40S / 00S04F / 30S0 _.

3.2 Precautions

1) While the computer and the AR-200S are communicating, please avoid the following actions, which could result in destruction of the data in the card.
- Inserting or removing the memory card.
- Moving the protect switch of the card.
- Disconnecting the RS-232C cable. ...etc.

Section4   Details of each Command

4.1   Commands Transmitted from the External Device (Computer) to the AR-200S

The following 5 types of command are transmitted from the external device to the AR-200S.
"External" in these explanations refers to the computer. "AR" refers to the AR-200S.

1) Control (execute) commands
   These command signals cause the AR-200S to operate; e.g., playback or record.
   The player functions use mostly these commands.

2) Editing commands
   To prevent accidental erasure of data, edit commands are executed after entering Delete mode.
   Commands are executed using the following procedure.

   1. External   to   AR
      The DM command is sent, and the AR-200S enters Delete mode.

   2. AR   to   External
      When the command is received correctly, an ACK is returned.
      If the command is not correct, an error code is returned, and Delete mode is automatically exited.
      * When no command is received for two minutes, the Delete mode is automatically exited.

   3. External   to   AR
      If no error has occurred, transmit the command to be executed.

   4. AR   to   External
      The command transmitted in step 3 will be re-transmitted for confirmation.

   5. External   to   AR
      If the command is correct, transmit an ACK command.
      The command will be executed, and Delete mode will be exited automatically. If the command is an error, transmit an ER command
      "ER:1;". Delete mode will be exited automatically.
      Commands valid when in Delete mode

   External   to   AR
CD:	Delete Card	LW:	Recorded Phrase Protect Mode
CP:	Copy Card	PC:	Copy Phrase
FM:	Format Card	PD:	Delete Phrase
LS:	Recorded Phrase Protect Mode	PI:	Seek and Set Playback Points at the Locations of Silent Portions

   In Delete mode, when a command other than an Edit command is received by the AR-200S, it will automatically exit Delete mode, and execute that command. If the AR-200S receives an Edit command when not in Delete mode, it will transmit an ER command, and ignore the Edit command that was received.

3) Setting commands
   These commands are used to set AR-200S parameters from the external device.

4) Request commands

This command causes the AR-200S to output the status of its current settings. When a Request command is transmitted to the AR-200S, the AR-200S will transmit the requested contents as the Setting output command. In this case, an ACK will not be returned. However for the AC and AQ commands, an ACK will be output. If the command was not correct, an ER command will be returned.

5) Reply commands

Reply commands are necessary for communication control, for example to notify that a command was received correctly.

4.2 Details of Commands Sent from the External Device (Computer) to the AR-200S

Commands compatible with the AR-2000 are marked as shown below (relevant symbol appears before name).

= Commands for the AR-2000/AR-3000/AR-200S (those common to both the AR-2000, AR-3000 and AR-200S)

> Commands for the AR-3000/AR-200S (commands newly added with the AR-3000 and AR-200S)

< Commands for the AR-2000 (for the AR-2000; includes items that cannot be used with the AR-3000/AR-200S)

4.2.1 Control Commands

Playback Commands

= PA   Specifying the Playback Phrase

Function: Specifying the playback phrase
Syntax: **stxPA:** a, a, ..., a;
            a   Phrase number

Example)   **PA:A1,A3,B5;**
            Specify A0001 and A0003 and B0005 as the playback phrases.
            The specified phrases are consecutively played back from the left.

Note: A maximum of 100 phrases can be specified in one line.
        Be sure that the phrase numbers are registered (i.e., for which data exists).

= PE   Pause Playback / Restart Playback

Function: Pauses Playback / Restarts playback
Syntax: **stxPE;**

Note: When this command is sent during phrase playback, the AR-200S stops playback and enters the paused state. Sending the PE command again releases the pause, and playback resumes from where it was paused. When operation is paused with the PE command, the AR-200S outputs the elapsed time from the start of the phrase to the point where paused. (Refer to AE command 4.4.1)

Caution: The command is not compatible with the Dual Mono Mode.
            Phrases other than audio phrases cannot be specified.
            The AR-200S cannot respond to this command during crossfades, repeats, or intervals.
            The command is not compatible with audio phrases recorded in Mode 2.。

            (AR-200S will transmit an ER command.)

= PL   Playback Start

Function: Starts Playback
Syntax: **stxPL;**

Example） **stxPA:A0001,A0003,A0007,A0006,A0010;**

When phrases are specified as above with the PA command, phrases A0001, A0003, A0007, A0006, and A0010 are played back in sequence.

Note: *Phrases specified with the PA command are played back in sequence.*
If no playback phrase is specified with the PA command, phrase A0001 is assigned and played back.(* If no phrases are available, the ER command is output.)

* When Dual Mono Mode is on (for settings, refer to 4.2.3 SM Commands), phrases specified with the PA command are split into odd- and even-numbered phrases. The odd-numbered phrases are played back through the left channel and the even-numbered phrases are played back through the right channel.

(Compatible with mono phrases. Not compatible with stereo phrases. For more details, refer to the AR-200S Owner's Manual.)
Interval playback does not go into effect, even if the playback mode is set to interval playback with the AR-200S.

= RL   Playback from the Middle of a Phrase

Function: Playback from the Middle of a Phrase
Syntax: **stxRL**: a, b;
           a Locate Forward / Backward
              0 Backward
              1 Forward
           b Offset Time
              0H0M0S0F – 11H59M59S**F

Example） **stxRL**:1,0H10M59S0F;
   - After specifying a phrase: Playback begins 10 minutes 59 seconds from the beginning of the phrase of the specified number.
   - While playback is paused: Playback begins from the point that is 10 minutes 59 seconds after the point where the pause was initiated.

Note: The number of digits for **F (frame) increases according to the value of MTC type.

The range in which the offset time can be specified is valid only within a single phrase.

An offset time that exceeds the recording time for the phrase cannot be specified.

(The AR-200S outputs an ER command.) You can play back a phrase from a point offset by a specified time before or after a paused point by sending this command while playback is paused (see the PE command).

* When "Return Specified" is issued with an offset time longer than elapsed time: The phrase is played back from the beginning.

* When "Forward Specified" is issued with an offset time longer than the remaining time: An ER command is output and playback is not carried out. (The paused state remains in effect, so specify a new offset time and send an RL command again.)

Caution: The command is not compatible with the Dual Mono Mode.
Phrases other than audio phrases cannot be specified.
The command is not compatible with audio phrases recorded in Mode 2.

>**PLL**   Start Left Channel Playback (Dual Mono Mode)

Function: Starts playback of the left channel
Syntax: **stxPLL;**

Example) **stxPA:A0001,A0003,A0007,A0006,A0010;**
When Dual Mono Mode is on and the above phrases are specified with the PA command, phrases A0001, A0003, and A0007 are played back in sequence through the left channel.

Note: Odd-numbered phrases specified with the PA command are played back in sequence through the left channel.
If no playback phrase is specified with the PA command, phrase A0001 is assigned and played back.(* If no phrases are available, the ER command is output.)

Compatible with mono phrases. Not compatible with stereo phrases. For more details, refer to the AR-200S Owner's Manual.

Caution: If the AR-200S is not set to Dual Mono Mode, the ER command is output.
Interval playback does not go into effect, even if the playback mode is set to interval playback with the AR-200S.

>PLR Start Right Channel Playback (Dual Mono Mode)

Function: Starts playback of the right channel
Syntax: **stxPLR;**

Example) **stxPA:A0001,A0003,A0007,A0006,A0010;**

When Dual Mono Mode is on and the above phrases are specified with the PA command, phrases A0006 and A0010 are played back in sequence through the right channel.

Note: *Even-numbered phrases specified with the PA command are played back in sequence through the right channel.*
If no playback phrase is specified with the PA command, phrase A0001 is assigned and played back. (* If no phrases are available, the ER command is output.)

Compatible with mono phrases. Not compatible with stereo phrases. For more details, refer to the AR-200S Owner's Manual.

Caution If the AR-200S is not set to Dual Mono Mode, the ER command is output.
Interval playback does not go into effect, even if the playback mode is set to interval playback with the AR-200S.

>PLB Start Playback (During Phrase Play Busy Out On) (Dual Mono Mode)

Function: Starts playback (when During Phrase Play Busy Out setting is On)
Syntax: **stxPLB;**

Example) **stxPA:A0001,A0003,A0007,A0006,A0010;**

When Dual Mono Mode is on and the above phrases are specified with the PA command, the phrases are played back in sequence. Phrases A0001, A0003, and A0007 are played through the left channel and phrases A0006 and A0010 are played through the right channel.

Note: *Phrases specified with the PA command are split into odd- and even-numbered phrases. The odd-numbered phrases are played back through the left channel and the even-numbered phrases are played back through the right channel.*
If no playback phrase is specified with the PA command, phrase A0001 is assigned and played back. (* If no phrases are available, the ER command is output.)

Compatible with mono phrases. Not compatible with stereo phrases. For more details, refer to the AR-200S Owner's Manual.

Caution If the AR-200S is not set to Dual Mono Mode, the ER command is output.
Interval playback does not go into effect, even if the playback mode is set to interval playback with the AR-200S.
When multiple phrases are played back in sequence, Busy Out signals are also output during intervals between phrases.

= ST Halting Playback/Recording

Function: Halting playback/recording
Syntax: **stxST;**

Recording Commands

= AE	Starting Time-Stamped Recording

Function: Starting Time-stamped Recording

Syntax: **stxAE:** a, b, c, d, e, f, g, h, i;

- a   year (1998 – 2050)
- b   month (1 – 12)
- c   day (1 – 31)
- d   hour (0 – 23)
- e   minutes (0 – 59)
- f   second (0 – 59)
- g   RDAC-Grade
  - 0   Announce
  - 1   Long 2
  - 2   Long 1
  - 3   Standard
  - 4   High
  - 5   S-High
- h   RDAC-Mode
  - 0   Linear
  - 1   Mode 1
  - 2   Mode 2
  - 3   Mode 3
  - 4   H – Linear
- i   Recording Type
  - 0   Mono
  - 1   Stereo

Example) **stxAE:2006,3,1,8,59,0,0,1,0;**

Add a time stamp for "2006" "March" "1" "8:59:00" and start recording with "Announce" "Mode1" "Mono."

Note: *The time information given in the command can be stored in the recorded phrase as a time stamp.*

The AR-200S starts recording immediately when it receives an AE command. However, When you have made the trigger recording setting, the waits for audio input higher than the trigger level (the volume level at which recording

starts), then starts recording. (It is not necessary to send an RE command. Levels in trigger recording settings may change depending on the immediately preceding recording action and the card settings.)

The phrase number is automatically assigned to a free number where nothing is recorded. Use the ST command to stop recording.

Also, the AR-200S automatically returns the total number of phrases recorded on the card when it receives an AE command. (Refer to AE command 4.4.1)

= RE   Start Recording

Function: Start recording
Syntax: **stxRE;**

Note: When using the RE command, you must first use the RM command to put the
unit in Record ready mode. To stop recording, use the ST command.
Recording starts when audio higher than the trigger level is input.
the following four types of trigger recording setteings are available.
OFF: Trigger recording is not performed.
LOW: Recording starts when audio higher than -45dB.
MID: Recording starts when audio higher than -36dB.
HIGH: Recording starts when audio higher than -27dB.

= RM   Record Ready Mode

Function: Record ready mode
Syntax: **stxRM:** a, d , c, d, e, f, g;
a   Phrase number
b   RDAC-Grade
0 Announce
1 Long 2
2 Long 1
3 Standard
4 High
5 S-High
c   RDAC-Mode
0 Linear
1 Mode1
2 Mode2
3 Mode3
4 H – Linear
d   Recording type
0 Mono
1 Stereo
e   Trigger recording
0 Off
1 Low
2 Mid
3 High
f   Reserved (0)
g   Reserved (0)
Example)   **RM: A1,3,2,1,0,0,0;**
This sets as follows; phrase "A0001", RDAC-Grade "STANDARD", RDAC-Mode
"MODE2", Recording type "STEREO", Trigger recording "OFF".

Caution: It is not possible to specify a phrase number which has already been recorded.
If you wish to re-record a phrase that is already recorded, use the PD command to
delete the phrase, and then transmit the RM command.
The AR-200S cannot respond to this command during crossfades, repeats, or
intervals.

4.2.2   Editing Commands

= DM   Enable Execution of Editing Commands

Function: Enable execution of editing commands.
Syntax: **stxDM;**

Note: *In order for editing commands to be executed, the DM command must be used to put the unit into Delete mode. For the communication protocol, refer to 4.1 2) Editing commands.*

Caution: When Delete mode is exited, the AR-200S will automatically output a CC command. The AR-200S automatically escapes from the Delete mode two minutes after the DM command is issued. To run editing commands, send a DM command again to enter the Delete mode.

Card Editing

= CD   Delete Card

Function: Delete Card
Syntax: **stxDM;**
          stxCD: a;
          a   Reserved (0)
Example) **CD:0;**
          Erase all phrases from a PC card.

= FM   Format Card

Function: Format Card
Syntax: **stxDM;**
          stxFM: a , b , c;
          a   Reserved (0)
          b   Maximum number of phrase
                   0   250
                   1   500
                   2   1000
          c   Reserved (0 or 1)
Example) **FM:0,1,0;**
          The card is formatted as follows; the maximum number of phrases "500".

Note: *The type and capacity of the card is detected automatically.*
         Use only cards which the AR-200S is able to use.

= LS   Recorded Phrase Protect Mode

Function: Recorded phrase protect mode
Syntax: **stxDM;**
          stxLS: a;
          a   Select ON/OFF
                   0   OFF
                   1   ON

> LW   Recorded Phrase Protect Mode

Function: Recorded phrase protect mode
Syntax: **stxDM;**
          stxLW: a, b;
          a   Reserved (0)
          b   Select ON/OFF
                   0   OFF
                   1   ON

Phrase Editing

= PC   Copy Phrase

Function: Copy phrase
Syntax: **stxDM;**
           stxPC: a, b;
           a   Phrase number of the copy source
           b   Phrase number of the copy destination
Example)   **PC:A1,A3;**
           This copies the contents of phrase "A0001" to phrase "A0003".

= PD   Delete Phrase

Function: Delete phrase
Syntax: **stxDM;**
           stxPD: a;
           a   Phrase number

= PI Seek and Set Playback Points at the Locations of Silent Portions

Function: Seek and set playback points at the locations of silent portions
Syntax: **stxDM;**
           stxPI: a;
           a   Phrase number

Note: Only audio phrases can be specified.

4.2.3   Setting Commands

Card Settings

= CV   Card Name Settings

Function: Card name setting
Syntax: **stxCV:** a, b, c;
           a   Reserved (0)
           b   Card name (up to 8 characters)
           c   Reserved (0)
Example)   **stxCV:0,"ABCDEFGH", 0;**
           This specifies a name of "ABCDEFGH" for the card.

Pattern Phrase Settings

< PU   Pattern Phrase Settings

Function: Pattern Phrase settings
Syntax: **stxPU:** a, b, c, d, **....** , c, d;
           a   Pattern Phrase number
           b   Pattern Phrase Playback mode
                 0 Sequence
                 1 Random
           c   Phrase number to be played back
           d   Delay Time (0S0 - 59S9)

Example)   **PU:A1,0,A5,5S0,A10,15S1,B151,10S0;**
           For phrase number "A0001", this registers a "Sequential playback" pattern phrase
           consisting of the following; phrase number "A0005", a delay of "5 seconds", phrase
           number "A0010", a delay of "15.1 seconds", phrase number "B0151", and a delay of
           "10 seconds".

Note: A maximum of 100 phrases can be specified in one line.

Caution   For the pattern phrase number, specify a phrase number where nothing is recorded.
For the playback phrase number, Audio phrases, MIDI phrases, and pattern phrases can be specified.

> PS   (Pattern phrase Set up for AR-3000/200S)

Function: Pattern Phrase settings
Syntax_1: (Sequence or Random 1)
stxPS: a, b, c, d, e, f, g, **....** , d, e, f, g;

   a Pattern Phrase number
   b Pattern Phrase Playback mode
     0   Sequence
     1   Random 1
   c Researved (0)
   d Playback Sequence
   e Phrase number to be played back
   f Playback Volume (10 – 100 : 10% - 100%)
   g Delay Time (0S0 - 59S9)

Syntax_2: (Random 2 or Random 3)
stxPS: a, b, c, d, e, f, g, **....** , d, e, f, g;

   a Pattern Phrase number
   b Pattern Phrase Playback mode
     2   Random 2
     3   Random 3
   c Interrupt phrase interval (1 – 25)
   d Playback Sequence(1 – 100 : phrases , 101 – 128 : interrupt phrases)
   e Phrase number to be played back
   f Playback Volume (10 – 100 : 10% - 100%)
   g Delay Time (0S0 - 59S9)
  * On specification, delay time cannot be set for interrupt phrase. Please send one value of 0S0-59S9.

Note: A maximum of 128 phrases can be specified in one line.

Caution   For the pattern phrase number, specify a phrase number where nothing is recorded.
For the playback phrase number, Audio phrases, MIDI phrases, and pattern phrases can be specified.

> SS Song Phrase Settings

Function: Song Phrase settings
Syntax: **stxSS:** a, b, c, **....** , b, c;
   a Song Phrase number
   b Phrase number to be played back   /   STOP (To specify the ending point)
   c Start point of phrase   /   End point of song phrase

Note: A maximum of 100 phrases can be specified in one line.
The number of digits for **F (frame) increases according to the value of MTC type.

Caution   For the song phrase number, specify a phrase number where nothing is recorded.
For the playback phrase number, Audio phrases can be specified.
The number of digits for **F (frame) increases according to the value of MTC type.

Phrase Settings

< SU   Phrase Settings

Function: Phrase settings
Syntax: **stxSU:** a , "b" , c, d, e, f, g, h , i, j;

a   Phrase number
b   Phrase name (up to 12 characters)
c   Playback Volume (10 - 100)
d   Delay Time (0S0 - 59S9)
e   Repeat Playback
    0 OFF
    1 ON
f   Repeat interval (0M0S - 59M59S)
g   Control Output
    0 OFF
    1 ON
h   Offset time of control output (0M0S - 59M59S)
i   Tempo (5 - 260)
j   Reserved (0)

Example) **SU:A001,"ABCDEFGHIJK",100,10S5,1,5M0S,1,5M10S,120,0;**
For phrase number "A001", this sets as follows; Phrase name "ABCDEFGHIJK", Playback Volume "100%", Delay Time "10.5 seconds", Repeat Playback "ON", Repeat interval "5 minutes", Control Output "ON", Offset time of control output "5min10sec", and Tempo "120".

Note: Be sure to specify an already recorded phrase as the phrase number.

> PN   Phrase Name Settings

Function: Phrase Name settings
Syntaxs **stxPN:** a, "b";

a   Phrase number
b   Phrase name (up to 12 characters)

> PR   Phrase Repeat Settings

Function: Phrase Repeat settings
Syntax: **stxPR:** a, b, c, d;

a   Phrase number
b   Repeat
    0 OFF
    1 ON
c   The number of repetitons
    0 ENDLESS
    1 1
    | |
    99 99
d   Repeat interval (0M0S - 59M59S)

> PO   Control Out Settings

Function: Control Out settings
Syntax: **stxPO:** a, b, c;

a   Phrase number
b   Control Out
    0 OFF
    1 ON
c   Offset Time (0M0S - 59M59S)

> PP   Playback Point Settings

Function: Playback Point settings
Syntax: **stxPP:** a, b, c;
      a   Phrase number
      b   Start (0H0M0S0F0S - 23H59M59S**F9S)
      c   End   (0H0M0S0F0S - 23H59M59S**F9S)

Note: *The number of digits for **F (frame) increases according to the value of MTC type.*

Caution   The AR-200S cannot respond to this command during crossfades, repeats, or intervals.

> LP   Loop Play Settings

Function: Loop Play settings
Syntax: **stxLP:** a, b, c, d, e;
      a   Phrase number
      b   Loop Play
         0   OFF
         1   ON
      c   The number of loops
         0   ENDLESS
         1   1
         | |
         99 99
      d   Loop 1 position (0H0M0S0F0S - 23H59M59S**F9S)
      e   Loop 2 position (0H0M0S0F0S - 23H59M59S**F9S)

Note: *The number of digits for **F (frame) increases according to the value of MTC type.*

Caution   The command is not compatible with pattern phrases and song phrases.
         The command is not compatible with audio phrases recorded in Mode 2.

> PY   Delay Time Settings

Function: Delay Time settings
Syntax: **stxPY:** a, b;
      a   Phrase number
      b   Delay Time (0S0F - 59S**F)

Note: *The number of digits for **F (frame) increases according to the value of MTC type.*

> VM   Play Volume Settings

Function: play Volume settings
Syntax: **stxVM:** a, b;
      a   Phrase number
      b   Play Volume %(10 - 100)

▷ FD　Fade In and Fade Out Settings

Function:　Fade In and Fade Out settings

Syntax:　**stxFD:** a, b, c, d, e;

- a　Phrase number
- b　Fade In Type
  - 0　OFF
  - 1　Time 1
  - 2　Time 2
  - 3　Time 3
  - 4　(0S1 - 59S9)
- c　Fade In Time (0S1 - 59S9)
  - * This parameter is ignored when fade out type is 0 to 3. Please send one value of 0S1-59S9.
- d　Fade Out Type
  - 0　OFF
  - 1　Time 1
  - 2　Time 2
  - 3　Time 3
  - 4　(0S1 - 59S9)
- e　Fade Out Time (0S1 - 59S9)
  - * This parameter is ignored when fade out type is 0 to 3. Please send one value of 0S1-59S9.

Caution　The command is not compatible with pattern phrases and song phrases.

▷ TT　Time Stamp Settings

Function:　Time Stamp settings

Syntax:　**stxTT:** a, b, c, d, e, f, g;

- a　Phrase number
- b　year(1998 - 2050)
- c　month(1 - 12)
- d　day(1 - 31)
- e　hour(0 - 23)
- f　minute(0 - 59)
- g　second(0 - 59)

System Settings

= BR　Communication Speed Settings

Function:　Communication speed setting

Syntax:　**stxBR:** a, b;

- a　Reserved (0)
- b　Baud rate
  - 0 (4800)
  - 1 (9600)
  - 2 (19200)
  - 3 (38400)

Note:　*Even if you use this command to specify the communication speed of the card, that of the AR-200S will not be changed. It can be changed by turning on again or by setting*

= CE   Program(Count) Playback Settings

Function: Program (Count) Playback setting
Syntax: **stxCE:** a**,** b**,** c**,** c**, ... ,** c**;**
     a   Reserved (0)
     b   Program Playback pattern(1 - 5)
     c   Phrase number to be played back (up to 100 phrases)

Example）**CE:0,1,A1,A2,A3,A4,A5;**
This registers A0001,A0002,A0003,A0004,and A0005 into the Program Playback pattern 1.

= DP   Direct Playback Settings

Function: Direct Playback setting
Syntax: **stxDP:**a**,** b**,** c**, ... ,** j**;**
     a   Reserved (0)
     b - j   Phrase number which you wish to assign to control input pin
        b (CH1)
        c (CH2)
        |
        j (CH9)

Example）**DP:0,A1,_,A3,A4,_,A9;**
The setting will be written to Card, and the phrases will be assigned to the control input pin as follows; A0001 to CH1,...,A0003 to CH3, A0004 to CH4,..., and A0009 to CH9.

Note: For unused direct channels, specify "----".
If you specify "PLAY" instead of a phrase, you can playback directly the phrase shown in the display by the control input pin.

> DL   Direct Playback Settings

Function: Direct Playback setting
Syntax: **stxDL:** a**,** b**,** c**, ... ,** j**,** k**;**
     a   Reserved (0)
     b - j   Phrase number which you wish to assign to control input pin
        b (CH1)
        c (CH2)
        |
        j (CH9)
     k   Direct Playback Method
        0   Normal playback
        1   First-In playback
        2   Last-In playback
        3   Sequence playback

Example）**DL:0,A1,_,A3,A4,..,A9,0;**
The setting will be written to Card, and the phrases will be assigned to the control input pin as follows; A0001 to CH1,...,A0003 to CH3, A0004 to CH4,..., A0009 to CH9, Direct Playback "Normal playback".

Note: For unused direct channels, specify "----".
If you specify "PLAY" instead of a phrase, you can playback directly the phrase shown in the display by the control input pin.

Caution   Direct Playback Settings data will not be written to card.

< SM   System Settings

Function: System settings

Syntax: **stxSM:** a**,** b**,** c**,** d**,** e**,** f**;**

     a   Reserved (0)

     b   Line Input select

         0 Mute：Line Thru ON , Volume 0%

         1 Mix ：Line Thru ON , Volume 100%

         2 OFF ：Line Thru OFF

     c   Channel Playback (Dual Mono mode)

         0 OFF

         1 ON

     d   Control Input select

         0 Normal playback：for Direct Playback

         1 Last-In playback：for Direct Playback

         2 Sequence playback ：for Direct Playback

         3 Program(Count) playback

         4 Binary playback

     e   Binary Playback Input Trigger

         0 Level: Level On , Edge Off

         1 Edge: Level Off , Edge On

     f   Busy Output

         0 All On: Delay Time On , Phrase Playback On , Repeat Interval On

         1 Delay On: Delay Time On , Phrase Playback On , Repeat Interval Off

         2 Repeat On: Delay Time Off , Phrase Playback On , Repeat Interval On

         3 All Off: Delay Time Off , Phrase Playback On , Repeat Interval Off

Example） **stxSM:0,0,0,0,1,0;**

     System settings will be made for Line Input select "MUTE", Channel Playback "OFF", Control Input select "Normal playback", Binary Playback Input Trigger Mode "Edge", and Busy Output "All On."

Note：   *Use LS to protect a recorded phrase.*

Caution   System data will not be written to card.

> CI Control Input Mode Settings

Function: Control Input Mode setting

Syntax: **stxCI:** a**,** b**,** c**,** .... **,** q**;**

a	Reserved (0)		d	Binary Playback Trigger Settings Level
b	Control Input Mode			
	0	Direct Play		0 Off
	1	Program(Count Play)		1 On
	2	Binary Play	e	Binary Playback Trigger Settings Edge
	3	Binary REC		
c	Direct Playback Method			0 Off
	0	Normal		1 On
	1	First In	f	The Method used for specifying the phrase (Binary Recording)
	2	Last In		
	3	Sequence		0 Binary 1
				1 Binary 2

Caution   Control Input Mode data will not be written to card.

> DN　　Dual Mono Mode Settings

Function:　Dual Mono Mode setting
Syntax:　　**stxDN:** a, b;

　　　　　　a　　Reserved (0)
　　　　　　b　　Dual Mono Mode
　　　　　　　　0　Off
　　　　　　　　1　On

> LT　　Line Out(Thru) Settings

Function:　Line Out(Thru) setting
Syntax:　　**stxLT:** a, b, c, d, e;

　　　　　　a　　Reserved (0)
　　　　　　b　　Line Thru
　　　　　　　　0　Off
　　　　　　　　1　On
　　　　　　c　　Thru Volume % (0 - 100)
　　　　　　d　　Fade Out (0S5 - 59S9)
　　　　　　e　　Fade In　(0S5 - 59S9)

> EQ　　Equalizer Settings

Function:　Equalizer setting
Syntax:　　**stxEQ:** a, b, c, d, e, f, g;

　　　　　　a　　Reserved (0)
　　　　　　b　　Equaizer
　　　　　　　　0　Off
　　　　　　　　1　On
　　　　　　c　　Equalizer Low Gain dB
　　　　　　　　(-12 - +12)
　　　　　　d　　Equalizer Low Frequency
　　　　　　　　0　200Hz
　　　　　　　　1　400Hz
　　　　　　e　　Equalizer High Gain dB (-12 - +12)
　　　　　　f　　Equalizer High Frequency
　　　　　　　　0　3kHz
　　　　　　　　1　6kHz
　　　　　　g　　Equalizer Attenation dB(-12 - 0)

> BO　　Busy Out Settings

Function:　Busy Out setting
Syntax:　　**stxBO:** a, b, c, d;

　　　　　　a　　Reserved (0)
　　　　　　b　　During Delay Time
　　　　　　　　0　Off
　　　　　　　　1　On
　　　　　　c　　During Phrase Play
　　　　　　　　0　Off
　　　　　　　　1　On
　　　　　　d　　During Repeat Int
　　　　　　　　0　Off
　　　　　　　　1　On

4.2.4　Request Commands

< 2Q　Pattern Phrase Setting Contents Request

Function: Pattern Phrase setting contents request
Syntax: **stx2Q: a;**
　　　　a　　Pattern Phrase number

Note: *This is a request for when the phrase type is pattern phrase.*
(* refer to PU command)

> 3Q　Pattern Phrase Setting Contents Request

Function: Pattern Phrase setting contents request
Syntax: **stx3Q: a;**
　　　　a　　Pattern Phrase number

Note: *This is a request for when the phrase type is pattern phrase.*
(* refer to PS command)

> GQ　Song Phrase Setting Contents Request

Function: Song Phrase setting contents request
Syntax: **stxGQ: a;**
　　　　a　　Song Phrase number

Note: *This is a request for when the phrase type is song phrase.*
(* refer to SS command)

= AC　Activity Sensing (Verify AR-200S Unit Activity)

Function: Activity sensing (Verify AR-200S unit activity)
Syntax: **stxAC;**

Note: *Normally, an ACK command will be output from the AR-200S by using this command.*
During recording , playback or playpause, the Phrase number will be output.

= AQ　Reset the Phrase Output Counter

Function: Reset the Phrase Output Counter
Syntax: **stxAQ: a;**
　　　　a　　Reserved (0)

Note: *This sets the Phrase Output Counter to the lowest-numbered phrase of the phrases registered in the card. Use this command before you wish to output the settings of all phrases by using the PQ command, for example when you confirm the initial settings.*

= CQ　Card Setting Contents Request

Function: Card setting contents request
Syntax: **stxCQ: a;**
　　　　a　　Reserved (0)

Note: *refer to CS command*

= DQ   Direct Playback Setting Contents Request

Function: Direct Playback setting contents request
Syntax: **stxDQ:** a**;**
            a   Reserved (0)

Note: refer to DP command

= MQ   Card Remaining Capacity Request

Function: Card remaining capacity request
Syntax: **stxMQ;**

Note: refer to CR command

< PQ   Phrase Setting Contents Request

Function1: Phrase setting contents request
Syntax: **stxPQ:** a**;**
            a   Phrase number
Note: The phrase settings for the specified phrase number will be output.
            The value of the Phrase Output Counter (described below) will not change.
            (---> refer to the SU command)

Function2: If the phrase number is not specified as a parameter, the AR-200S will output the
            phrase settings for automatically incremented phrase number by the Phrase Output
            Counter.
Syntax: **stxPQ:;**

*Note: The incremented value will skip phrase numbers which are not recorded yet, and
          will be up to the next recorded phrase number. If the PQ command is used to
          request output even after the setting information of the last phrase has been
          output, the AR-200S will output   "stx ER:101;".
          In the case of a Pattern Phrase, you must use the separately described 3Q
          command to request output of the settings. (---> refer to 3Q command)*

＊About the Phrase Output Counter

          *The AR-200S contains the Phrase Output Counter. The maximum value of this
          counter is the maximum phrase number of each card. The counter is reset (i.e.,
          to the lowest phrase number) by the AQ command. So you can request each
          phrase settings of all phrases in the card by sequentially using the PQ
          command's function 2 after resetting the counter.*

> QQ   Phrase Setting Contents Request

Function1: Phrase setting contents request
Syntax: **stxQQ**: a;
      a   Phrase number

Note: *The phrase settings for the specified phrase number will be output.*
      The value of the Phrase Output Counter (described below) will not change.
      (* refer to the RU command)

Function2: If the phrase number is not specified as a parameter, the AR-200S will output the
      phrase settings for automatically incremented phrase number by the Phrase Output
      Counter.
Syntax: **stxQQ**:;

Note: *The incremented value will skip phrase numbers which are not recorded yet, and
will be up to the next recorded phrase number. If the PQ command is used to
request output even after the setting information of the last phrase has been
output, the AR-200S will output "stx ER:101;".*
*In the case of a Pattern Phrase, you must use the separately described 3Q
command to request output of the settings. (* refer to 3Q command)*

* About the Phrase Output Counter
      *The AR-200S contains the Phrase Output Counter. The maximum value of this
counter is the maximum phrase number of each card. The counter is reset (i.e.,
to the lowest phrase number) by the AQ command. So you can request each
phrase settings of all phrases in the card by sequentially using the QQ
command's function 2 after resetting the counter.*

< SQ   System Setting Contents Request

Function: System setting contents request
Syntax: **stxSQ**: a;
      a   Reserved (0)

Note: *refer to SM command*

> YQ   System Setting Contents Request

Function: System setting contents request
Syntax: **stxYQ**: a;
      a   Reserved (0)

Note: *refer to SY command*

= TQ   Time Stamp Request

Function1: Time Stamp request
Syntax: **stxTQ**: a;
           a   Phrase number

Note: Output the recording start time information for the specified phrase. (Refer to 4.4.1 TI Command.) The AR-200S outputs an ER command for phrases in which time information is not recorded.

Function2: Time Stamp request
           If the phrase number is not specified as a parameter, the AR-200S will output the Time Stamp information for automatically incremented phrase number by the Phrase Output Counter.
Syntax: **stxTQ**:;

Note: The incremented value will skip phrase numbers which are not recorded yet, and will be up to the next recorded phrase number. If the TQ command is used to request output even after the setting information of the last phrase has been output, the AR-200S will output "stx ER:101;".

= UQ   Program (Count) Playback Setting Contents Request

Function: Program (Count) Playback setting contents request
Syntax: **stxUQ**: a, b;
           a   Reserved (0)
           b   Program Playback patterns(1 - 5)

Note: refer to CE command

= VR   Version Request

Function: Version request
Syntax: **stxVR**;

Note: The AR-200S will output the "model name" and "version".
         (* refer to the 4.4.1 VR command for the AR-200S)

4.2.5   Reply Commands

= ACK   Response to Normal Reception of a Command

Function: Response to normal reception of a command
Syntax: **ACK (06H)**

= ER   Reply to the AR-200S When an Error Has Occurred

Function: Reply to the AR-200S when an error has occurred
Syntax: **stxER:** a**;**
           a   Error number
           0   Send this command to the AR-200S when the output of the AR-200S could not be read (In the case of a request command, the AR-200S will re-transmit the Setting output command.)
           1   Send this command when the output of the AR-200S for confirmation is incorrect in Delete mode. Then the command you transmitted will be canceled, and the AR-200S will automatically exit Delete mode.

= Xon (11H)/Xoff (13H) Allow or Disable Transmission. Used for Handshaking

Function: Allow or disable transmission. Used for handshaking.
Syntax: **Xon** is **11H** only (transmission permitted)
Xoff is **13H** only (transmission disabled)

4.3 Commands Sent from the AR-200S to the External Device (Computer)

The following two types of commands are sent from the AR-200S to an external device. In this explanation, "external device" refers to the computer. "AR" refers to the AR-200S.

1) Setting output commands
These commands output the current setting status of the AR-200S. They are output in response to a request command from the external device.

2) Reply commands
Reply commands are necessary for communication control, such as acknowledgment that a command was correctly received, etc.

4.4 Details of Commands Sent from the AR-200S to the External Device (Computer)

4.4.1 Setting Output Commands

= CS   Card Setting Output

Function: Card setting output
Syntax: **stxCS:** a, "b", c, d, e, f, g;
    a   Reserved (0)
    b   Card name (8 characters)
    c   Reserved
    d   Reserved
    e   Maximum number of phrase
        0 (250)
        1 (500)
        2 (1000)
    f   Card ID (Created automatically)
    g   Reserved

Note: refer to CQ command

Phrase Settings

< PU   Pattern Phrase Setting Output

Function: Pattern Phrase setting output
Syntax: **stxPU:** a, b,   c, d, **....** , c, d;
    a   Pattern Phrase number
    b   Pattern Phrase Playback mode
        0 (Sequence)
        1 (Random)
    c   Phrase number to be played back(A1-A1000,B1-B1000)
    d   Delay Time (00S0 - 59S9)

Note: refer to 2Q command

> PS   Pattern Phrase Setting Output

Function: Pattern Phrase setting output
Syntax: **stxPS:** a, b, c, d, e, f, g, **....** , d, e, f, g;
           a   Pattern Phrase number
           b   Pattern Phrase Playback mode
                    0 (Sequence)
                    1 (Random 1)
                    2 (Random 2)
                    3 (Random 3)
           c   Interrupt phrase interval
                    (Sequence , Random 1 : 0 /   Random 2 , Random 3 : 1-25)
           d   Playback Sequence
           e   Phrase number to be played back(A1-A1000,B1-B1000)
           f   Playback Volume(10 - 100 : 10% -   100%)
           g   Delay Time(0S0 - 59S9)

Note: *refer to 3Q command*

> SS Song Phrase Setting Output

Function: Song Phrase setting output
Syntax: **stxSS:** a, b, c, b, c, **....** , b, c;
               stxSS: a, b, c, b, c, **....** , STOP, c;
           a   Song Phrase number
           b   Phrase number to be played back   /   STOP (To specify the ending point)
           c   Start point of phrase / End point of song phrase
                    (0H00M00S00F - 23H59M59S**F)

Note: *refer to GQ command*
         *The number of digits for **F (frame) increases according to the value of MTC type.*

< SU   Phrase Setting Output

Function: Phrase setting output
Syntax: **stxSU:** a, "b", c, d, e, f, g, h, i, j, k, l, m, n, o;

    a   Phrase number
    b   Phrase name (up to 12 characters)
    c   Phrase type
        0 Phrase
        1 Pattern Phrase
        2 MIDI Phrase
        3 Song Phrase
    d   RDAC-Grade
        0 Announce
        1 Long 2
        2 Long 1
        3 Standard
        4 High
        5 S-High
    e   RDAC-Mode
        0 Linear
        1 Mode 1
        2 Mode 2
        3 Mode 3
        4 H-Linear
    f   Recording Type
        0 Mono
        1 Stereo
    g   Playback Volume (10 - 100)
    h   Delay Time (0S0 - 59S9)
    i   Repeat Playback
        0 OFF
        1 ON
    j   Repeat interval (0M0S - 59M59S)
    k   Control Output
        0 OFF
        1 ON
    l   Offset time of control output (0M0S - 59M59S)
    m   Tempo (5 - 260)
    n   reserved (Only '0',zero)
    o   Phrase size (unit: byte)

Note: *refer to PQ command*

> RU   Phrase Setting Output

Function: Phrase setting output

Syntax: **stxRU: a, "b", c, d, e, f, g, h, i, j, k, l, m, n, o, p, q, r, s, t, u, v, w, x, y;**

a	Phrase number		m	Offset time of control output (0M0S - 59M59S)
b	Phrase name (up to 12 characters)		n	Fade In Type
c	Phrase type			0 OFF
	0 Phrase			1 Time 1
	1 Pattern Phrase			2 Time 2
	2 MIDI Phrase			3 Time 3
	3 Song Phrase			4 (0S1 - 59S9)
d	RDAC-Grade		o	Fade In Time (0S1 - 59S9)
	0 Announce		p	Fade Out Type
	1 Long 2			0 OFF
	2 Long 1			1 Time 1
	3 Standard			2 Time 2
	4 High			3 Time 3
	5 S-High			4 (0S1 - 59S9)
e	RDAC-Mode		q	Fade Out Time (0S1 - 59S9)
	0 Linear		r	Start (0H0M0S0F0S - 23H59M59S**F9S)
	1 Mode 1		s	End (0H0M0S0F0S - 23H59M59S**F9S)
	2 Mode 2		t	Loop Play
	3 Mode 3			0 (OFF)
	4 H-Linear			1 (ON)
f	Recording Type		u	The number of loops
	0 Mono			0 ENDLESS
	1 Stereo			1 1
g	Playback Volume (10 - 100)			| |
h	Delay Time (0S0 - 59S9)			99 99
i	Repeat Playback			- Loop play Off
	0 OFF		v	Loop 1 position (0H0M0S0F0S - 23H59M59S**F9S)
	1 ON		w	Loop 2 position (0H0M0S0F0S - 23H59M59S**F9S)
j	Repeat Count		x	Tempo (5 - 260)
	0 ENDLESS		y	Phrase size (unit: byte)
	1 1			
	| |			
	99 99			
k	Repeat interval (0M0S - 59M59S)			
l	Control Output			
	0 (OFF)			
	1 (ON)			

Note: *refer to QQ command*

The number of digits for **F (frame) increases according to the value of MTC type.

System Settings

= AC   Active Sensing Reply

Function: Active sensing reply
Syntax: **stxAC:** a, b**;**
       a   Status of AR-200S
           0 During playback
           1 During recording
           2 During recording pause
           3 During playback pause
       b   Phrase number

Note: *During Dual Mono Mode, this is output twice.*
               refer to the 4.2.4 AC command

= CE   Program (Count) Playback Setting Output

Function: Program (Count) Playback setting output
Syntax: **stxCE:** a**,** b**,**   c, c, **....** , c**;**
       a   Reserved (0)
       b   Program Playback patterns (1 - 5)
       c   Phrase number to be played back (up to 100 phrases)

Note: *refer to UQ command*

= CR   Card Remaining Capacity Output

Function: Card remaining capacity output
Syntax: **stxCR:** a**,** b**;**
       a   Remaining capacity of card A
       b   Remaining capacity of card B

Note: *unit: byte. refer to MQ command*
               If the card is in AR-2000 format, AR output '0' for remaining capacity.

= DP   Direct Playback Setting Output

Function: Direct Playback setting output
Syntax: **stxDP:** a**,** b**,**   c, **....** , j**;**
       a   Reserved (0)
       b - j Phrase number which you assigned to control input pin
           b CH1
           c CH2
           | |
           j CH9

Note: *For unused direct channels, "----" is output. "PLAY" will be output for the direct*
               channel which plays back the phrase shown in the display.
               (--> refer to DQ command)

< SM   System Setting Output

Function: System setting output
Syntax: **stxSM:** a, b, c, d, e, f**;**
a   Reserved (0)
b   Line Input select
- 0   Mute
- 1   Mix
- 2   OFF

c   Channel Playback (Dual Mono Mode)
- 0   OFF
- 1   ON

d   Control Input select
- 0   Normal playback
- 1   Last-In playback
- 2   Sequence playback
- 3   Program playback
- 4   Binary playback

e   Binary Playback Input Trigger
- 0   Level
- 1   Edge

f   Busy Output
- 0   All On
- 1   Delay On
- 2   Repeat On
- 3   All Off

Note: *refer to SQ command*

> SY   System Setting Output

Function: System setting output
Syntax: **stxSY:** a, b, c, d, e, f, g, h, i, j, k, l, m, n, o, p, q, r, s, t, u, v, w, x**;**

a	Reserved (0)		j	Line Thru Volume % (0 - 100)
b	Control Input select		k	Line Thru Fade Out (0S5 - 59S9)
	0	Direct playback	l	Line Thru Fade In (0S5 - 59S9)
	1	Program playback	m	Equaizer
	2	Binary playback		0 Off
	3	Binary REC		1 On
	4	Interval playback	n	Equalizer Low Gain dB (-12 - +12)
c	Direct playback		o	Equalizer Low Frequency
	0	Normal playback		0 200Hz
	1	First-In playback		1 400Hz
	2	Last-In playback	p	Equalizer High Gain dB (-12 - +12)
	3	Sequence playback	q	Equalizer High Frequency
d	Binary Playback Trigger			0 3kHz
	Settings Level			1 6kHz
	0	Off	r	Equalizer Attenation dB(-12 - 0)
	1	On	s	Reserved (0)
e	Binary Playback Trigger		t	Busy Out - During Delay Time
	Settings-Edge			0 Off
	0	Off		1 On
	1	On	u	Busy Out - During Phrase Play
f	The Method used for specifying			0 Off
	the phrase (Binary Recording)			1 On
	0	Binary 1	v	Busy Out - During Repeat Int
	1	Binary 2		0 Off
g	Reserved (0)			1 On
h	Dual Mono Mode		w	Reserved (0)
	0	OFF	x	Reserved (00M30S)
	1	ON		
i	Line Thru			
	0	Off		
	1	On		

Note: *refer to YQ command*

= TI Time Stamp Settings

Function: Time Stamp settings
Syntax: **stxTI:** a**,** b**,** c**,** d**,** e**,** f**,** g**;**
  a   Phrase number
  b   year(1998 - 2050)
  c   month(1 - 12)
  d   day(1 - 31)
  e   hour(0 - 23)
  f   minute(0 - 59)
  g   second(0 - 59)

Note: *refer to TQ command*

≡ VR   Version Output

Function: Version output
Syntax: **stxVR:"a", "b",   c;**
   a   Model name
   b   Version
   c   Reserved (fixed at two space characters)

4.4.2   Commands Transmitted From the AR-200 Automatically

≡ %%   Card Operation Progress Status Output

Function: Card operation progress status output
When a card operation is performed, this tells what percent has been completed.
Syntax: **stx%%: a;**
   a   Percent (0 - 100)

Note: ACK output will terminate this.

This is transmitted automatically in response to the following commands.

CD:	Delete Card	PD:	Delete Phrase
FM:	Format Card	PI:	Seek and Set Playback Points at the Locations of Silent Portions
PC:	Copy Phrase		

≡ AE   Output the Total Number of Phrases Recorded on the Card

Function: Output the total number of phrases recorded on the card
Syntax: **stxAE: a;**
   a   the total number of phrases recorded on the card

Note: This is output when AR receives an AE command.
"S" will be specified ahead of the total number.

≡ CC   Card Insertion Status Output

Function: Card insertion status output
Syntax: **stxCC: a, b;**
   a   Status of card slot A
      0 Not inserted
      1 Inserted
   b   Reserved (0)

Note: This is transmitted automatically when a card is inserted or removed. This also occurs automatically for verification after the Delete mode has been exited.

≡ PE   Output the Elapsed Time from the Start of the Phrase

Function: Output the elapsed time from the start of the phrase
Syntax: **stxPE: a;**
   a   (**H**M**S**F*S)

Note: When operation is paused with the PE command, the AR-200S outputs the elapsed time from the start of the phrase to the point where paused.
*The number of digits for **F (frame) increases according to the value of MTC type*

> ST　　Output at Finish of Playback

Function:　Output at Finish of Playback

Syntax:　**stxST:** a**;**

　　　　a　The number showing the channel which playback finished.

　　　　　0　When Dual Mono mode is OFF

　　　　　1　L Channel when Dual Mono mode is ON

　　　　　2　R Channel when Dual Mono mode is ON

Note:　Output when playback of phrases is finished and the AR is not playing any phrase.

4.4.3　Reply Commands

= ACK　Acknowledge Normal Status, Indicate Normal Reception of a Command

Function:　Acknowledge normal status, indicate normal reception of a command

Syntax:　**ACK (06H)**

= ER　　Replies When an Error Has Occurred

Function:　Replies when an error has occurred.

Syntax:　**stxER:** a**;**

　　　　a　Error number

　　　　0　Syntax error

　　　　　This error occurs when correct reception was not possible, such as when the syntax of the command was incorrect or inappropriate.

　　　　1　The specified phrase does not exist, or the phrase number is incorrect. This error will also be output if a phrase number is specified for a card which is not inserted.

　　　　2　Busy error.

　　　　　The AR-200S is currently recording, playing back or record-ready. When the AR-200S is recording, playing back or record-ready, it will process only the following commands.

	Control commands	Request commands
During Recording	PA , ST	AC
During Play	PA , ST , PE	AC
During Play Pause	PA , ST , PE , RL	AC
During Recording-ready	RE, ST	AC

3   An editing command was received when the AR-200S was not in Delete mode.

4   This error occurs if a setting/delete/record command is transmitted while the write protect switch of the card is ON.

5   This error occurs when the total number of phrases specified by the PA, PU, or CE commands exceeds the maximum value (100), or when the specified parameter value is outside of the limit of the maximum value.

6   This error occurs when the characters being set for a phrase name or card name exceed the maximum value.

7   This error occurs when characters other than numerals (0 - 9) are used to specify an integer.

8   This error occurs when you attempt to specify a previously recorded phrase as a pattern phrase.

9   This error occurs when you attempt to record or copy a phrase on an already recorded phrase.

10   There is no remaining card capacity.

20   The command could not be executed for some other reason.

21   Unsupported card or Incorrect format. Please change cards or format card.

100   The AR-200S received a "2Q" or "3Q" command even though the specified phrase was not a pattern phrase.

101   A "PQ" ,"QQ" or "TQ" command is used to request output even after the setting information of the last phrase has been output.

202   There is no time information for the specified phrase.

300   The command is not compatible with the Dual Mono mode.

301   Specify a time parameter within the phrase recording time.

302   Phrases other than audio phrases cannot be specified.

304   Phrases other than audio phrases, MIDI phrases, and pattern phrases cannot be specified.

305   There is no blank phrase.

306   In the Delete mode, only editing commands are processed.

307   Before sending an RL command, first specify a phrase with the PA command.

309   The settings cannot be output, because it is expanded function in AR-200S. Please use the request command corresponding to AR-200S.

310   To execute the edit operation, transmit "ACK". To cancel the delete operation, Transmit "stxER:1".

311   The AR-200S received a "GQ" command even though the specified phrase was not a song phrase.

313   The command does not correspond to the selected phrase.

314   The AR-200S received a "PS" command even though the interrupt phrases for ramdom 2 or 3 are not specified.

315   A card in AR-2000 format was inserted in either slot A or B (or both). Or the syntax of the command was incorrect or inappropriate.

320   The AR-200S gets hot. Ventilate well to avoid overheating, and keep the unit cool.

Note: *When these commands occur, commands from the external device will be ignored.*

◻ Xon (11H) / Xoff (13H) Allow or Disable Transmission. Used for Handshaking

Function: Allow or disable transmission. Used for handshaking.

Syntax: **Xon** is **11H** only (transmission permitted)

Xoff is **13H** only (transmission disabled)

Section5   Appendix

5.1   AR-200S Commands List

5.1.1   AR-2000 Compatible Commands List

 # Commands transmitted from the external device (computer) to the AR-200S

 # Control Commands

Playback Commands

PA	PhrAse	Specifying the playback phrase	type2
PE	PausE	Pauses playback / Restart	type1
PL	PLay	Starts playback	type1
RL	Relative time pLay	Playback from the middle of a phrase	type2
PLL	PLay L ch	Starts left CH playback	type1
PLR	PLay R ch	Starts right CH playback	type1
PLB	PLay Busy on	Starts playback (During Phrase Play Busy Out On)	type1
ST	STop	Halting playback/recording	type1

Recording Commands

AE	Auto inc rEc start	Starting time-stamped recording	type2
RE	REc start	Start recording	type1
RM	Rec Mode	Record pause	type2

 # Editing Commands

DM	Delete Mode	Enable execution of editing commands	type1

Card Editing

CD	Card Delete	Delete card	type2
FM	ForMat	Format card	type2
LS	phrase Lock Switch	Recorded phrase protect mode	type2

Phrase Editing

PC	Phrase Copy	Copy phrase	type2
PD	Phrase Delete	Delete phrase	type2
PI	Phrase sIlencer	Delete silence (Truncate)	type2

 # Setting Commands

Card Settings

CV	Card Volume label	Card name setting	type2

Phrase Settings

SU	phrase Set Up	Phrase settings	type2
PU	Pattern phrase set Up	Pattern phrase settings	type2

System Settings

BR	Baud Rate	Communication speed setting	type2
CE	Count play sEt up	Program(Count) Playback setting	type2
DP	Direct Play	Direct playback setting	type2
SM	SysteM	System settings	type2

 # Request Commands

2Q	pattern phrase reQuest	Pattern phrase setting contents request	type2
AC	ACtive	Activity sensing(Verify AR-200S unit activity)	type1
AQ	All reQuest	Reset the phrase output counter	type2
CQ	Card reQuest	Card setting contents request	type2
DQ	Direct playback reQuest	Direct playback setting contents request	type2
MQ	Memory reQuest	Card remaining capacity request	type1
PQ	Phrase reQuest	Phrase setting contents request	type2
SQ	System reQuest	System setting contents request	type2
TQ	Time stamp reQuest	Time stamp request	type2
UQ	coUnt playback reQuest	Program(Count) playback setting contents request	type2
VR	VeRsion	Version request	type1

 # Reply Commands

ACK(06H)		Response to normal reception of a command	type0
ER	ERror	Reply to the AR-200S when an error has occurred	type2

Xon(11H)/Xoff(13H)		Allow or disable transmission	type0

 # Commands sent from the AR-200S to the external device

 # Setting Output Commands

CS	Card Set	Card setting output	type2

Phrase Settings

PU	Pattern phrase set Up	Pattern phrase setting output	type2
SU	phrase Set Up	Phrase setting output	type2

System Settings

AC	ACtive	Active sensing reply	type2
CE	Count playback sEt up	Program(Count) playback setting output	type2
CR	Card Remain	Card remaining capacity output	type2
DP	Direct Play	Direct playback setting output	type2
SM	SysteM	System setting output	type2
TI	Time stamp Info.	Time stamp setting output	type2
VR	VeRsion	version output	type2

 # Commands Transmitted From the AR-200S Automatically

%%	%?	Card operation progress status output	type2
AE	Auto inc rEc start	Output the total number of phrases	type2
CC	Card Condition	Card insertion status output	type2
PE	PausE	Output the elapsed time	type2

 # Reply Commands

ACK(06H)		Acknowledge normal status, indicate normal reception of a command	type0
ER	Error	Replies when an error has occurred	type2
Xon(11H)/Xoff(13H)		Allow or disable transmission	type0

5.1.2   AR-3000/200S Commands (Commands Newly Added with the AR-3000/200S) List

 # Commands transmitted from the external device (computer) to the AR-200S

 # Editing Commands
Card Editing

LW	Lock sWitch	Recorded phrase protect mode	type2

 # Setting Commands
Phrase Settings

PS	Pattern phrase Set up	Pattern phrase settings	type2
SS	Song phrase Set up	Song phrase settings	type2
PN	Phrase Name set up	Phrase name settings	type2
PR	Phrase Repeat set up	Phrase repeat settings	type2
PO	Phrase control Out set up	Phrase control out settings	type2
PP	phrase Play Point set up	Phrase play point settings	type2
LP	phrase LooP set up	Phrase loop settings	type2
PY	Phrase delaY set up	Phrase delay settings	type2
VM	phrase VoluMe set up	Phrase volume settings	type2
FD	phrase FaDe set up	Phrase fade settings	type2
TT	Time sTamp set up	Phrase settings	type2

System Settings

DL	Direct pLay	Direct play setting	type2
CI	Control In set up	Control in setting	type2
DN	Dual moNo mode set up	Dual mono mode settings	type2
LT	Line Thru set up	Line thru setting	type2
EQ	EQualizer set up	Equalizer setting	type2
BO	Busy Out set up	Busy out setting	type2

 # Request Commands

3Q	pattern phrase reQuest	Pattern phrase setting contents request	type2
GQ	sonG phrase reQuest	Song phrase setting contents request	type2
QQ	phrase reQuest	Phrase setting contents request	type2
YQ	sYstem reQuest	System setting contents request	type2

 # Commands sent from the AR-200S to the external device

 # Setting Output Commands

Phrase Settings

PS	Pattern phrase Set up	Pattern phrase setting output	type2
SS	Song phrase Set up	Song phrase setting output	type2
RU	phRase set Up	Phrase setting output	type2

 # System Settings

SY	SYstem	System setting output	type2

 # Commands Transmitted From the AR-200S Automatically

ST	STop	Output at Finish of Playback	type2

Caution1:

STX(02H) is attached to top of the command, and some commands has parameters with it. In this commands list, STX(02H) and parameter are omitted.

Caution2:

Type0: Those consisting only of a control code.
Type1: Commands with no parameters.
Type2: Commands with parameters

5.2 Characters That Can Be Used in Phrase Names and Card Names

Blank locations in this table cannot be used. However, 20H is used as a space character.

		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
	0																
	1																
	2		!		#	$	%	&		(	)				–		
	3	0	1	2	3	4	5	6	7	8	9						
	4	@	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
	5	P	Q	R	S	T	U	V	W	X	Y	Z	[		]	^	_
	6																
	7																
	8																
	9																
	A		｡	｢	｣	、	･	ヲ	ァ	ィ	ゥ	ェ	ォ	ャ	ュ	ョ	ッ
	B	ｰ	ア	イ	ウ	エ	オ	カ	キ	ク	ケ	コ	サ	シ	ス	セ	ソ
	C	タ	チ	ツ	テ	ト	ナ	ニ	ヌ	ネ	ノ	ハ	ヒ	フ	ヘ	ホ	マ
	D	ミ	ム	メ	モ	ヤ	ユ	ヨ	ラ	リ	ル	レ	ロ	ワ	ン	゛	゜
	E																
	F																

5.3 Sample Algorithms

The following are some examples of processing algorithms.

5.3.1 Playing Back a Phrase

```
                    ┌─────────┐
                    │  START  │
                    └─────────┘
                         │
      ┌──────────────────────────────────────┐
      │ Specify the phrase to be played back. │
      │ (Transmit the "PA" command.)          │
      └──────────────────────────────────────┘
                         │
                    ◇─────────◇        "ER" command
                 What is the reply  ─────────────────→ Error *1
                 from the AR-200S?
                    ◇─────────◇
                         │
                      ACK *2
      ┌──────────────────────────────────────┐
      │ Start Playback.                        │
      │ (Transmit the "PL" command.)           │
      └──────────────────────────────────────┘
                         │
                    ◇─────────◇        "ER" command
                 What is the reply  ─────────────────→ Error
                 from the AR-200S?
                    ◇─────────◇
                         │
                        ACK
                    ┌─────────┐
                    │   END   │
                    └─────────┘
```
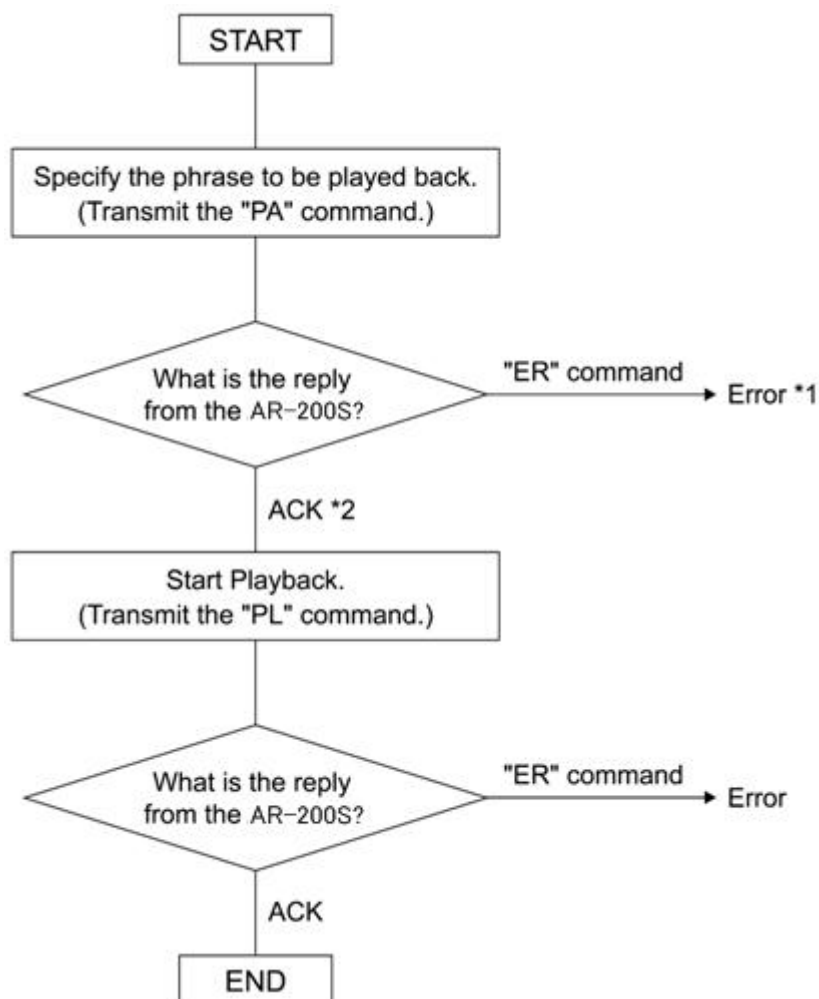
*1 Refer to the error number to determine the cause. Is the command format incorrect?
*2 "ACK" will be output if the AR-200S correctly recognizes the command.

Note:
- You can check the operating status by transmitting the " AC " command.
- You can stop playback by transmitting the " ST " command.

5.3.2 Recording (Nomal Recording)
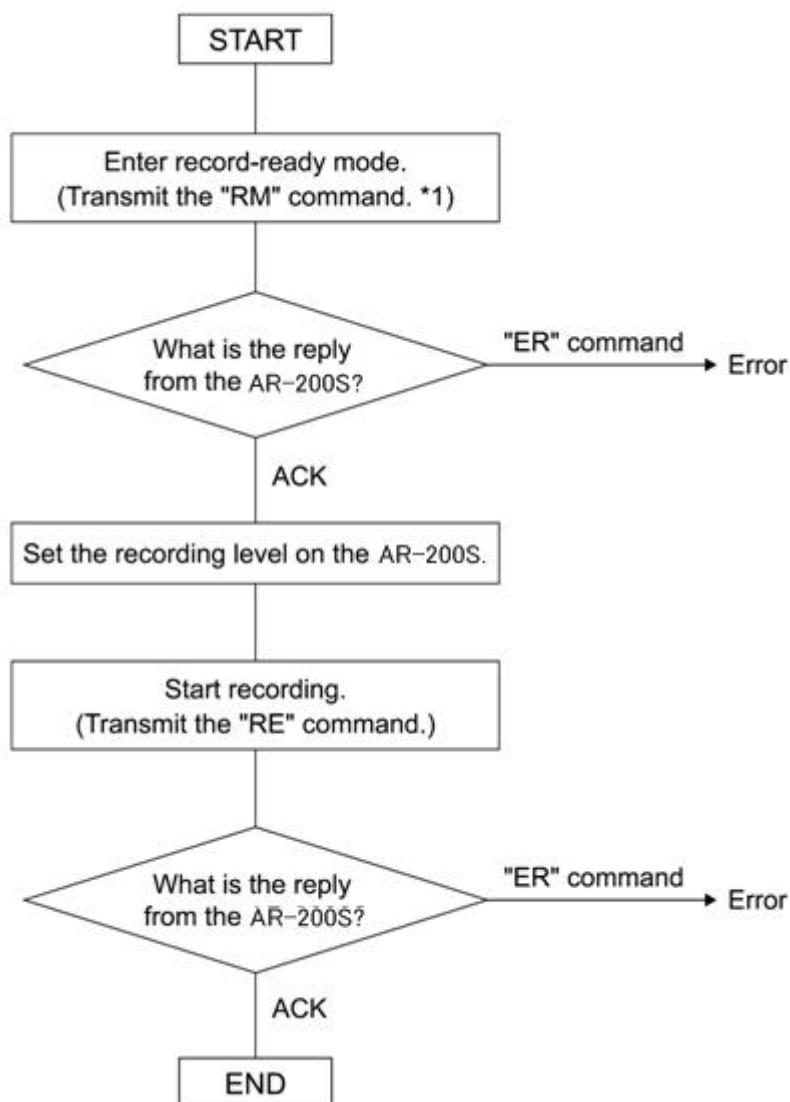
*1 Setting such as RDAC-Grade and RDAC-Mode are made by " RM " command parameters.

Note:
 - You can check the operating status by transmitting the " AC " command.
 - You can stop recording by transmitting the " ST " command.

5.3.3   Recording (Time-Stamped Recording)

```
                          ┌─────────────┐
                          │    START    │
                          └─────────────┘
                                 │
        ┌────────────────────────┤
        │               ┌────────▼──────────────────────┐
        │               │ Transmit the "AE" command *1   │
        │               │ with the time-stamp information added. │
        │               └────────────────────────────────┘
        │                        │
        │                       ╱ ╲            "ER" command
        │                      ╱   ╲  What is the reply ────────────▶ Error
        │                      ╲   ╱  from the AR–200S?
        │                       ╲ ╱
        │                        │
        │               Output the total number of phrases
        │                        recorded on the card.
        │                        │
        │       ┌────────────────▼─────────────────────┐
        │       │ The AR–200S starts recording immediately. │
        │       └──────────────────────────────────────┘
        │                        │
        │               ┌────────▼──────────────┐
        │               │ Stop recording.        │
        │               │ (Transmit the "ST" command.) │
        │               └────────────────────────┘
        │                        │
        │                       ╱ ╲            "ER" command
        │                      ╱   ╲  What is the reply ────────────▶ Error
        │                      ╲   ╱  from the AR–200S?
        │                       ╲ ╱
        │  In case of repetition  │
        └────────────────────────┤  ACK
                          ┌───────▼─────┐
                          │     END     │
                          └─────────────┘
```

*1 Setting such as RDAC-Grade and RDAC-Mode are made by " AE " command parameters.

Note:
 - You can check the operating status by transmitting the " AC " command.

5.3.4 Verifying the Parameters (Data Settings) of All Phrases Starting with the Lowest-Numbered Phrase

```
                              ┌─────────────┐
                              │    START    │
                              └─────────────┘
                                     │
                    ┌─────────────────────────────────┐
                    │        Enter Delete mode.        │
                    │   (Transmit the "DM" command.)   │
                    └─────────────────────────────────┘
                                     │
                         ◇─────────────────────◇   "ER" command
                         │   What is the reply   │──────────────►  Error
                         │   from the AR-200S?   │
                         ◇─────────────────────◇
                                     │ ACK
                    ┌─────────────────────────────────┐
                    │   Specify the phrase to be deleted. │
                    │   (Transmit the "PD" command.)   │
                    └─────────────────────────────────┘
                                     │
               *1        ◇─────────────────────◇   NO
                         │   Was "PD" returned   │─────────────┐
                         │   from the AR-200S?   │             │
                         ◇─────────────────────◇             │
                                     │ YES                     │
                         ◇─────────────────────◇   NO          │
                         │    OK to delete?      │─────────────►│
                         ◇─────────────────────◇             │
                                     │ YES                     │
                    ┌─────────────────────────────────┐       │
                    │   Execute the delete operation.  │       │
                    │        (Transmit "ACK" )         │       │
                    └─────────────────────────────────┘       │
                                     │          ┌──────────────────────────────────┐
                                     │          │  Cancel the delete operation. *2   │
                                     │          │   (Transmit the "stxER:1" )        │
                                     │          └──────────────────────────────────┘
                                     │◄──────────────────┘
                              ┌─────────────┐
                              │     END     │
                              └─────────────┘
```
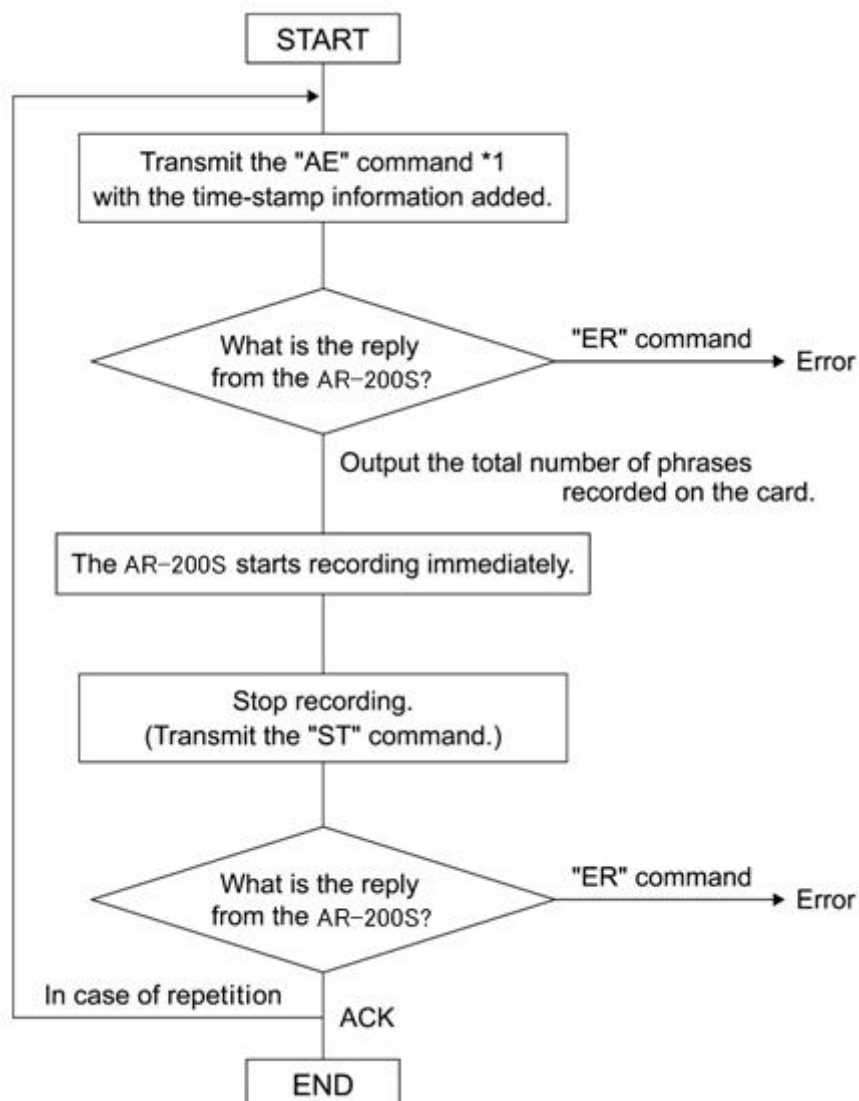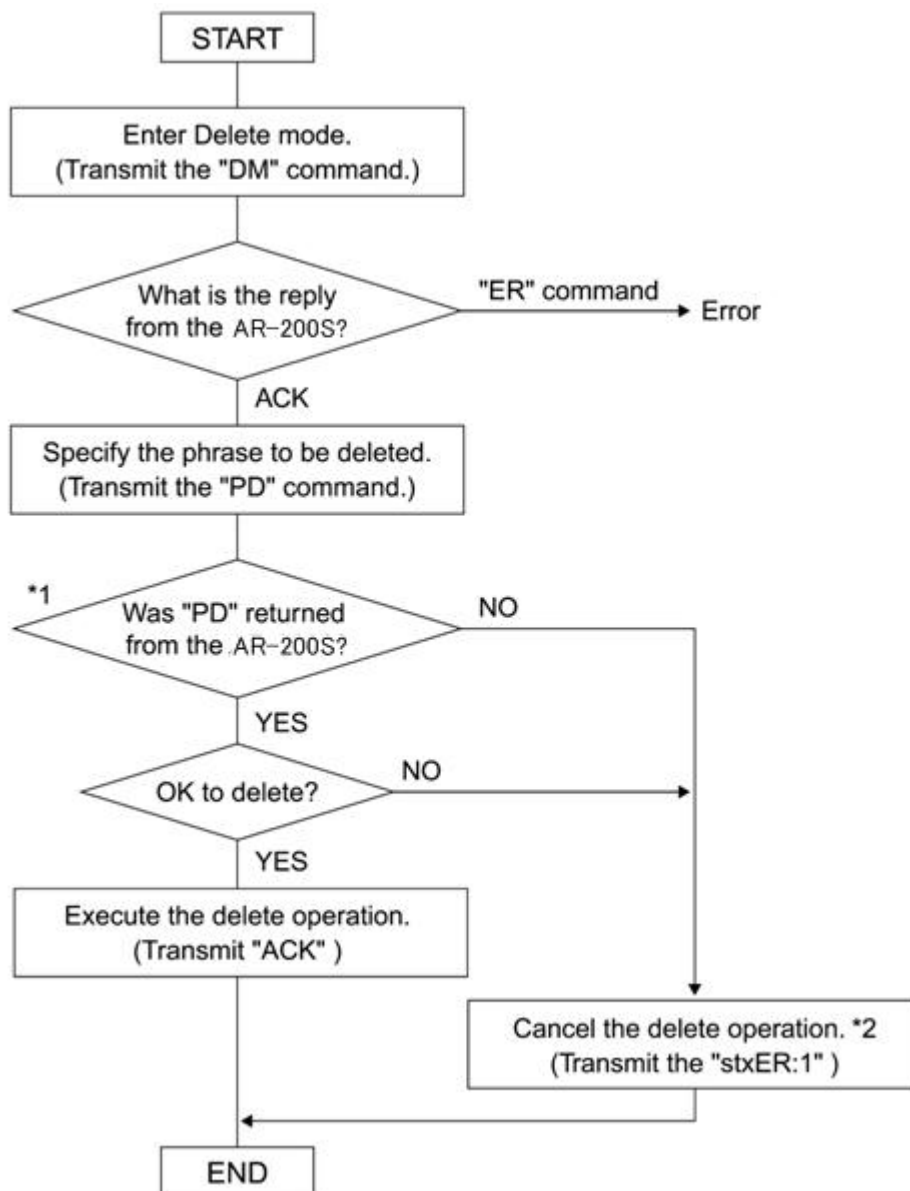
*1 What is the Phrase Output Counter?
The AR-200S has an internal counter for phrase output. When a phrase is output, the phrase that corresponds to the AR-200S's counter will be output. The maximum value will be the highest phrase number of each card. This will be reset by the AQ command (to the lowest phrase number).

*2 What is PQ Command Function 2?
If the phrase number is not specified by a parameter, the AR-200S will automatically increment the phrase output counter, and will output the corresponding phrase. The incremented value will skip phrase numbers which are not recorded yet, and will be up to the next recorded phrase number. If the PQ command is received to request output after the last phrase has been output, the AR-200S will output an ER command (Error number 101).

5.3.5   Deleting a Phrase
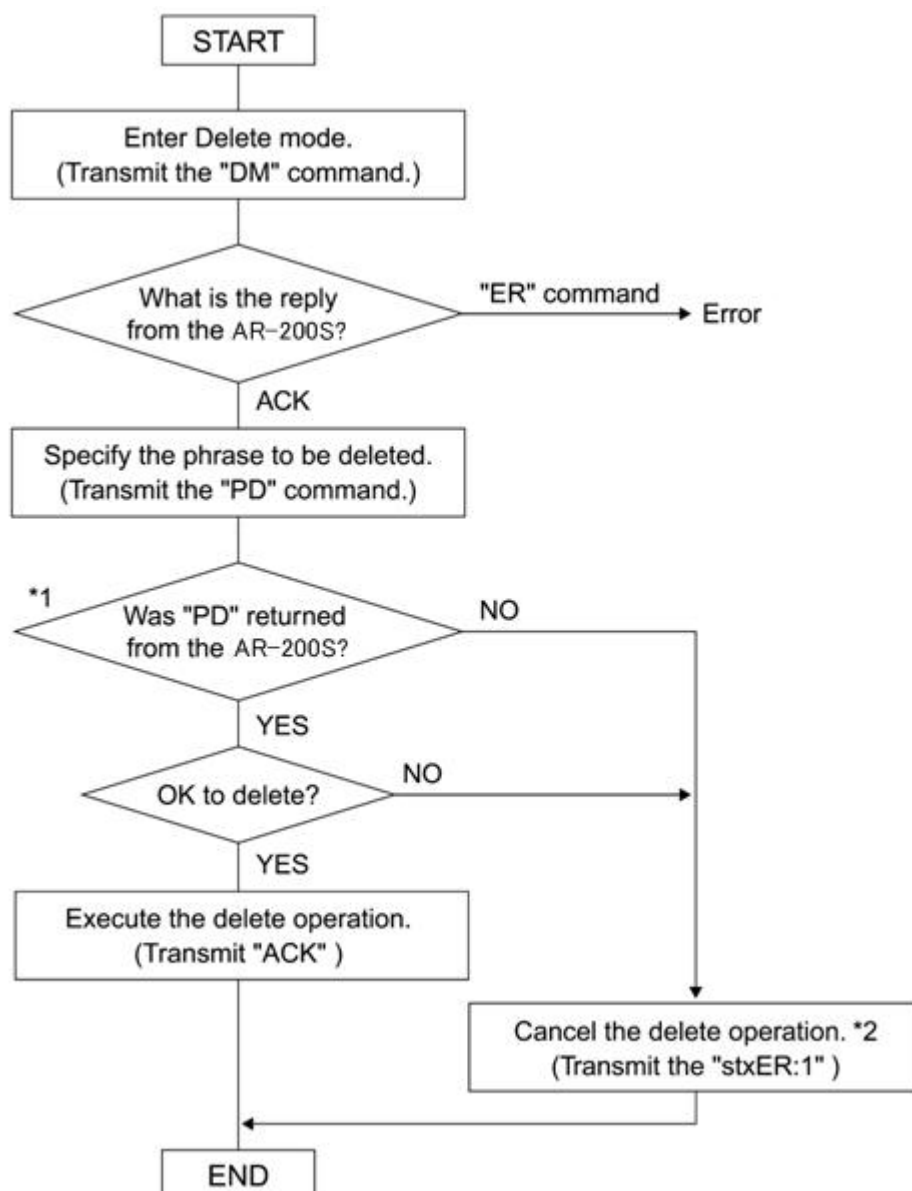
*1 The AR-200S will return the same " PD " command for confirmation.
*2 By transmitting "stxER:1:" you can exit Delete mode.